PART 3
BUILDING ENVELOPE

Comm 63.1010 Exempt buildings. This part applies to buildings or separately enclosed identifiable areas that have a mechanical space heating or air conditioning system.

Comm 63.1011 Air leakage and moisture migration.

(1) General. The requirements of this section apply to those building components that separate interior building conditioned space from the outdoors or from unconditioned spaces or crawl spaces. Compliance with the criteria for air leakage through building components shall be determined by tests conducted in accordance with specified standards.

(2) Air leakage for factory-manufactured windows, doors and curtain wall assemblies. Factory-manufactured windows, doors and curtain wall assemblies shall comply with IECC Section 802.3.1.

(3) Air leakage requirements for exterior envelope. Openings and penetrations in the building envelope shall be sealed or gasketed in accordance with s. Comm 63.0802 (3).

(4) Moisture condensation. The design of buildings shall not create conditions of accelerated deterioration from moisture condensation and shall comply with s. Comm 63.0802 (2).

Comm 63.1012 Daylight credits for skylights.

(1) Commercial buildings. Credits for skylights may be used in commercial buildings if the IECC Section 802 requirements and any modifications or additions specified in subch. II are met.

(2) Residential buildings. Daylight credits may be used in residential buildings if the IECC Section 502 requirements are met.

Comm 63.1014 Building envelope thermal performance.

(1) General. Except as provided in sub. (2), building envelopes shall comply with either the component standards of s. Comm 63.1015 or the system standards of s. Comm 63.1016. The calculation procedures of s. Comm 63.1019 shall be used to show compliance.

(2) Exceptions.

(a) Buildings and areas of buildings that are used as factories and automatic car washes shall comply with s. Comm 63.1017.

(b) Buildings and areas of buildings that are used as warehouses that have documentation provided to verify that the HVAC system to be installed does not use energy primarily to provide human comfort shall comply with s. Comm 63.1017.

Note: See s. Comm 63.1010 for exempt buildings and spaces.

Comm 63.1015 Component standards option.

(1) General. This section describes the component standards for building envelope thermal performance. Because component requirements consider the effect of solar gain as well as conductive heat transfer, the requirements for each component shall be met independently under this option. The wall and roof tradeoff exception in sub. (4) may be used with this option. The system analysis design method specified in IECC Section 806 shall be used to demonstrate the acceptability of tradeoffs between component energy-conserving features. Separate occupancies in the same building shall meet the requirements of this section independently.

(2) Determination of appropriate ACP table. The appropriate alternate component package or ACP table shall be determined based on building location using Figures 63.1015-1 and 63.1015-4.

(3) Maximum allowable window wall ratio. In this subsection, the percentage of windows, including glazed areas of doors, relative to the gross exterior wall area of the building shall be less than or equal to the maximum allowable window wall ratio chosen from the appropriate ACP table for the glazing type of the building. The window wall ratio is the total area of window assemblies, including glazed areas of doors, divided by the total gross exterior wall area, considering all elevations of the building. The maximum allowable window wall ratio shall be determined using the following steps:

(a) Select the shading coefficient (SCx) range that is no less than the fenestration SCx including permanently installed internal, integral and external shading devices, but excluding the effect of external shading projections. Note that this includes curtains, shades, or blinds that are permanently installed. For a shell or speculative building for which the envelope is designed or constructed prior to the design of the lighting, HVAC systems, or both, only those shading devices that are part of the design when it is being evaluated for compliance shall be considered when determining compliance.

Note: Refer to ASHRAE Handbook, Fundamentals Volume, Chapter 27 for more information on shading coefficients. Shading coefficients for fenestration may be obtained from the manufacturer or from IECC Table 102.5.2 (3) when the conversion factor for solar heat gain coefficient (SHGC) to SCx given in IECC Section 102.5.2 is applied. See also s. Comm 63.1019 (5).

(b) Select appropriate fenestration type. This is determined by the thermal transmittance value (U_{of}) of the fenestration assembly. The U_{of} of all assemblies must fall within the range, or lower, to determine the maximum window wall ratio, or an area-weighted average thermal transmittance value may be used.

(4) Wall and roof tradeoff. Tradeoffs between the above grade exterior wall opaque areas and the gross roof area shall be allowed if either of the following conditions are met:

(a) 1. Except as specified in subd. 2., the thermal transmittance, overall value (U_o) for any above-grade exterior opaque wall area or gross roof area may be increased or decreased, provided that the total annual energy use due to heat gain and loss for the building envelope is

less than or equal to the total annual energy use due to heat gain and loss resulting from the use of the values in the appropriate ACP table given in Figures 63.1015-1 to 63.1015-4. Calculation of the total annual energy use of the building designs shall be done in accordance with IECC Section 806.

2. The latest version of the ComCheck-EZ computer program or other programs subject to the approval of the department may be used to determine required thermal transmittance values in lieu of the ACP tables.

   Note: ComCheck-EZ is a computer program that may be used only for determining building envelope compliance. The ComCheck-EZ computer program may be downloaded at: http://www.eren.doe.gov/buildings/codes_standards/buildings/com_download.html. The federal Department of Energy has issued a computer package called ComCheck-Plus, which establishes tradeoffs between the building envelope, lighting, and HVAC equipment; however, this program has not been approved for use in Wisconsin since Wisconsin's lighting allowances are not the same as those included in the program.

   (b) A submittal to the department for review and approval, incorporating recognized engineering practices, that the annual energy use due to heat gain and loss for the building envelope shall be less than or equal to that established in par (a).

(5) Thermal transmittance values for roofs, walls and ceilings next to unconditioned spaces, and floors over unconditioned spaces.

(a) The *U*-values for the building roofs, walls and ceilings next to unconditioned spaces, and floors over unconditioned spaces shall be less than or equal to those listed in the appropriate ACP table given in Figures 63.1015-1 to 63.1019-4.

(b) Skylights for which daylight credit cannot be taken in accordance with s. Comm 63.1012 shall be included in the calculation of the overall thermal transmittance value of the roof assembly (U_{or}).

(c) Unconditioned below-grade spaces that have floor or ceiling assemblies insulated as specified on the appropriate ACP table do not require below-grade wall insulation.

FIGURE 63.1015-1
DEGREE DAY REGIONS FOR USE WITH ACP TABLES